

ABSTRACT

The present invention is to provide a process for producing chlorine by oxidizing hydrogen chloride with oxygen, wherein said process uses one catalyst selected from the following catalysts (1) to (9):

(1) a supported ruthenium oxide catalyst obtained by the steps which comprise supporting a ruthenium compound on a carrier, treating the supported one by using a basic compound, treating by using a reducing compound, and oxidizing;

(2) a supported ruthenium oxide catalyst obtained by the steps which comprise supporting a ruthenium compound on a carrier, treating the supported one by using a reducing agent to form ruthenium having an oxidation number of 1 to less than 4 valence, and oxidizing;

(3) a supported ruthenium oxide catalyst obtained by the steps which comprise supporting a ruthenium compound on a carrier, reducing the supported one by using a reducing hydrogenated compound, and oxidizing;

(4) a supported ruthenium oxide catalyst obtained by using titanium oxide containing rutile titanium oxide as a carrier;

(5) a supported ruthenium oxide catalyst obtained by the steps which comprise supporting a ruthenium compound on a carrier, treating the supported one by using a

reducing compound or reducing agent in a liquid phase, and oxidizing, wherein titanium oxide contains an OH group in an amount of 0.1×10^{-4} to 30×10^{-4} (mol/g-carrier) per unit weight of the carrier;

(6) a catalyst system containing the following components (A), and not less than 10% by weight of component (B):

(A) an active component of catalyst;

(B) a compound wherein thermal conductivity of a solid phase measured by at least one point within a range from 200 to 500°C is not less than 4 W/m.°C;

(7) a supported ruthenium oxide catalyst having a macro pore with a pore radius of 0.03 to 8 micrometer;

(8) an outer surface-supported catalyst obtained by supporting ruthenium oxide on a carrier at the outer surface; and

(9) a supported ruthenium catalyst obtained by using chromium oxide as a carrier.